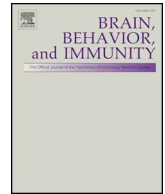




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Letter to the Editor

Prevalence, risk factors, and clinical correlates of insomnia in volunteer and at home medical staff during the COVID-19

Since December 2019, a large-scale outbreak of coronavirus disease 2019 (COVID-19) has broken out in Wuhan, China. Due to its high rate of infection, fast transmission, and high mortality, it has seriously threatened people's physical and mental health (Montemurro, 2020; Tan et al., 2020). Zhang et al. found that the insomnia rate of medical staff in Wuhan was as high as 38.4%, largely consistent with the 34% observed in another research team (Zhang et al., 2020). However, we are not clear about the insomnia symptoms of medical staff supporting Wuhan from different regions. They may also have difference with local medical staff in Wuhan. In this study, we investigated the prevalence of insomnia symptoms and the risk factors of insomnia, so as to provide appropriate management strategies practical, targeted interventions to improve the symptoms of insomnia in medical staff during the epidemic.

The study was approved by the Clinical Research Ethics Committee of Ningbo Kangning Hospital. Participants were free to withdraw their participation at any time. This cross-sectional study contained 948 (219 volunteered to Wuhan, 729 stayed at Ningbo) medical staff personnel, and conducted online from February 15 to February 22, 2020. Demographic data were collected using questionnaires, and Athens Insomnia Scale (AIS) and Self-Reporting Questionnaire-20 (SRQ-20) were administered to screen the sleep symptoms (i.e., ≥ 6 in AIS) and general psychological symptoms (i.e., ≥ 7 in SRQ-20), respectively.

There was no significant difference in gender, age, educational, and marital status between the two groups (all $p > 0.05$). The medical staff in Wuhan had higher insomnia than in Ningbo (58.90 vs. 24.97%; $p = 0.001$) and had more general psychological symptoms (13.24 vs. 8.64%; $p = 0.044$). Multivariate logistic regression analyses showed that among the medical staff in Wuhan, the symptoms of insomnia were related to gender (OR = 1.379, $P = 0.042$, 95% CI = 0.65–2.17), education (OR = 1.54, $P = 0.0076$, 95% CI = 0.69–2.52), and general psychological symptoms (OR = 2.124, $P < 0.01$, 95% CI = 1.69–2.67). Among the medical staff in Ningbo, insomnia was not only related to general psychological symptoms (OR = 1.60, $P < 0.01$, 95% CI = 1.48–1.74) but also related to marital status (OR = 0.57, $P = 0.046$, 95% CI = 0.33–0.99). The characteristics for each group and the statistical results were shown in Table 1.

Stress disrupts sleep, and sleep disorders may lead to further activation of HPA, leading to a vicious cycle of insomnia and stress. Due to the severe condition, such as sensitive to self-health, the spread of the virus, changes in the working environment, and isolation (Chew et al., 2020), the frontline health care workers in Wuhan may create more pressure. We found that gender, education level, depression, anxiety, and other physical symptoms were risk factors for insomnia among medical staff in Wuhan. It is worth noting that in our study, 78.08% of the people who volunteered to support Wuhan were women, especially that 65% are nurses (92% females). Nurses are suffering more stress than doctors, potentially due to longer working hours, higher working

load and irregular shifts. On the other hand, during the whole menstrual period, various hormone levels are related to sleep efficiency and sleep quality, women were also more likely to suffer from insomnia, which might explain the high insomnia ratio in volunteer medical staff population (Kang et al., 2020).

Concerning medical staff in Ningbo, we found that marital status was also a risk factor for insomnia. Compared with those who went to support Wuhan, many local medical staff had families and children. COVID-19 broke out during the Spring Festival in China, forcing parents to return to their hometown with no one to take care of their children, as well as to cancel their holidays in order to join the clinical front line. Thus, worrying about children and parents at home is also more likely to make them more susceptible to stress and prone to insomnia.

In conclusion, volunteer medical staff supporting Wuhan showed higher rate of insomnia and stress responses. This warrants more clinical attention and precise mental health care for these frontline medical workers.

Author Contributions

DZ, TFY and XW designed the study; HY, GB, ZH, CY, AL, XL, QZ, YC, XW and DZ collected the survey data; and XL, HY, XW, DZ and TFY analyzed the results and wrote the paper. All authors have read and approved the final version of the manuscript.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Table 1

Basic demographic and clinical characteristics of insomnia medical staff in Wuhan and Ningbo.

| | Wuhan Insomnia(n = 129) | Non-insomnia (n = 90) | F/ χ^2 | P | Ningbo Insomnia (n = 182) | Non-insomnia (n = 547) | F/ χ^2 | P |
|-----------------------|----------------------------|-----------------------|-------------|-------|------------------------------|------------------------|-------------|-------|
| Gender, % (n) | | | 14.01 | 0.001 | | | 0.35 | 0.55 |
| Female | 86.82 (112) | 65.56 (59) | | | 78.02 (141) | 75.87 (415) | | |
| Male | 13.18 (17) | 34.44 (31) | | | 21.98 (40) | 24.13 (132) | | |
| Age, % (n) | | | 0.089 | 0.77 | | | 3.36 | 0.34 |
| < 20 years | 0 (0) | 0 (0) | | | 0 (0) | 0.18 (1) | | |
| 20–40 years | 72.87 (94) | 70 (63) | | | 68.68 (125) | 68.37 (374) | | |
| 41–60 years | 27.13 (35) | 30 (27) | | | 30.77 (56) | 31.44 (172) | | |
| > 60 years | 0 (0) | 0 (0) | | | 0.55 (1) | 0 (0) | | |
| Education, % (n) | | | 4.83 | 0.028 | | | 1.87 | 0.17 |
| < Undergraduate | 11.63 (15) | 3.33 (3) | | | 15.38 (28) | 11.52 (63) | | |
| ≥ Undergraduate | 88.37 (114) | 96.67 (87) | | | 84.62 (154) | 88.48 (484) | | |
| Marital status, % (n) | | | 0.20 | 0.66 | | | 1.57 | 0.21 |
| Married/cohabitating | 72.87 (94) | 75.56 (68) | | | 82.42 (150) | 78.06 (427) | | |
| Other | 27.13 (35) | 24.44 (22) | | | 17.58 (32) | 21.94 (120) | | |
| SRQ-20, % (n) | | | 16.15 | 0.001 | | | 84.99 | 0.001 |
| Yes (> 7) | 20.93 (27) | 2.22 (2) | | | 25.27 (46) | 3.1 (17) | | |
| No (0–7) | 79.07 (102) | 97.78 (88) | | | 74.73 (136) | 96.9 (530) | | |

SRQ-20: Self-Reporting Questionnaire-20.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.bbi.2020.05.008>.

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